ABSTRACT OF THE DISCLOSURE

The invention includes methods of forming deuterated silicon nitride-containing materials from at least one deuterated nitrogen compound in combination with one or more silicon-containing compounds that do not contain hydrogen isotopes. Suitable deuterated nitrogen compounds can comprise, for example, NH_2D, NHD_2 and ND_3. Suitable silicon-containing compounds include, for example, $SiCl_4$ and Si_2Cl_6. Deuterated silicon nitride-containing materials of the present invention can be incorporated into, for example, transistor devices. The transistor devices can be utilized in DRAM cells, which in turn can be utilized in electronic systems.